

**SENATE . . . . . No. 515****The Commonwealth of Massachusetts**

PRESENTED BY:

*Julian Cyr*

*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:*

The undersigned legislators and/or citizens respectfully petition for the adoption of the accompanying bill:

An Act building resilience to acidification of our coastal waters.

PETITION OF:

NAME:	DISTRICT/ADDRESS:	
<i>Julian Cyr</i>	<i>Cape and Islands</i>	
<i>Mathew J. Muratore</i>	<i>1st Plymouth</i>	<i>2/24/2021</i>
<i>Joan B. Lovely</i>	<i>Second Essex</i>	<i>2/26/2021</i>
<i>Susan L. Moran</i>	<i>Plymouth and Barnstable</i>	<i>2/26/2021</i>
<i>Sarah K. Peake</i>	<i>4th Barnstable</i>	<i>2/26/2021</i>
<i>Susan Williams Gifford</i>	<i>2nd Plymouth</i>	<i>2/26/2021</i>
<i>Bruce E. Tarr</i>	<i>First Essex and Middlesex</i>	<i>2/26/2021</i>

# SENATE . . . . . No. 515

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By Mr. Cyr, a petition (accompanied by bill, Senate, No. 515) of Julian Cyr, Mathew J. Muratore, Joan B. Lovely, Susan L. Moran and other members of the General Court for legislation to build resilience to acidification of our coastal waters. Environment, Natural Resources and Agriculture.

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## The Commonwealth of Massachusetts

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In the One Hundred and Ninety-Second General Court  
(2021-2022)

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An Act building resilience to acidification of our coastal waters.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

1        SECTION 1. Chapter 6 of the General Laws is hereby amended by adding after Section  
2        15IIIIIII the following section:-

3        Section 15JJJJJJ. The governor shall annually issue a proclamation setting apart the third  
4        full week in August as Ocean Acidification Awareness Week and recommending that the day be  
5        observed in an appropriate manner by the people, promoting citizen science initiatives and action  
6        by the general public not only to preserve the health of the coastline but also to generate valuable  
7        scientific data for the Commonwealth.

8        SECTION 2. Section 1 of Chapter 21N of the General Laws is hereby amended by  
9        inserting each of the following definitions within the proper place to maintain descending  
10      alphabetical order:-

11                   (i) “ocean acidification”, the acidification of the greater Atlantic driven by atmospheric  
12 carbon deposition independent of Massachusetts coastal stressors.

13                   (ii) “coastal acidification”, the acidification of Massachusetts coastal waters driven by  
14 background ocean acidification, eutrophication, freshwater inputs, atmospheric deposition, and  
15 any other natural or anthropogenic stressor.

16                   (iii) “coastal stressors”, eutrophication, nutrient pollution, freshwater inputs, and  
17 atmospheric deposition from the coast acidifying coastal waters.

18                   (iv) “coastal waters”, any waters and associated submerged lands of the ocean, including  
19 the seabed and subsoil, lying between the coast and the seaward boundary of the commonwealth,  
20 as defined in 43 U.S.C. § 1312.

21                   (v)“coastal watershed”, merrimack, parker, ipswich, north coastal, mystic, Neponset,  
22 charles, south coastal, cape cod, islands, buzzards bay, taunton, and narragansett waters.

23                   (vi)“eutrophication” , a condition of coastal or freshwaters of having elevated nutrient  
24 concentrations. Eutrophication caused by human development is the primary cause of excessive  
25 algal growth and deoxygenation of coastal waters.

26                   SECTION 3. Section 10 of Chapter 21N of the General Laws, as appearing in the 2020  
27 Official Edition, is hereby amended by inserting after the phrase, “sea level rise and increased  
28 storm surge”, the following words:, ocean and coastal acidification.

29                   SECTION 4. Chapter 21N of the General Laws is hereby amended by adding after  
30 section 11, the following section:-

31                   Section 12

32                   (a) The secretary of energy and environmental affairs shall establish and chair the Ocean  
33 Acidification Council. Members shall include the directors or respective designees of the office  
34 of coastal zone management, the department of environmental protection, the environmental  
35 policy act office, the department of marine fisheries, the division of ecological restoration, and  
36 the department of agricultural resources. The council shall include public members appointed by  
37 the governor, including a member of a private monitoring organization in the state, a member of  
38 the state shellfishing industry, a scientist specializing in coastal conservation, a member of the  
39 Massachusetts municipal association.

40                   (b) The council is established to further understand and take action against the threat  
41 posed by ocean and coastal acidification. The council shall engage with and, to the extent  
42 practicable, coordinate, public and private monitoring efforts, harmonize data gathering, provide  
43 monitoring hardware and technical training, maintain a central repository for acidification data,  
44 and commission. The council shall recommend mitigative interventions for coastal stressors or  
45 adaptive technologies for aquaculture, prioritizing nature-based solutions to manage stormwater  
46 and reduce nutrient pollution. Funds may target existing programs and novel approaches to  
47 restore and buffer marine habitats and resources impacted by acidification, provided that, funds  
48 contributed from commercial license fees shall only be used for shellfishing adaptation efforts  
49 under this section.

50                   (c) Within one year of this the council's formation, the council shall have performed and  
51 published a gap analysis for ocean monitoring, recommending measures creating an appropriate  
52 spatial and temporal resolution to model ocean acidification in coastal waters and project  
53 acidification trends. The council shall convene a public workshop with local ocean monitoring  
54 groups to ascertain monitoring needs and inform the analysis, and hold two public hearings. The

55 analysis shall identify appropriate monitoring technologies, and select coastal waters where  
56 ocean acidification monitoring equipment shall be placed. The monitoring system should not  
57 only enable modeling for long term pH changes in coastal waters, but permit short-term  
58 monitoring of aragonite saturation in variable and sensitive coastal waters to protect critical  
59 habitat and shellfish.

60 (d) The council shall coordinate implementation of the monitoring system, implementing  
61 the system within three years from this act's passage. The council shall ensure that data derived  
62 from the monitoring system is publicly accessible in a standardized format useful for public and  
63 private research.

64 (e) The council may commission independent studies and agency reports to fill  
65 acidification knowledge gaps. The council shall commission such studies and reports as soon as  
66 practicable, beginning at a later date if dependent on the monitoring data derived under  
67 subsection (d) . The council shall avoid duplicating regional efforts, incorporating best available  
68 science with data from the state monitoring system established by 12(d) and data from local and  
69 private monitoring efforts, where available. These efforts should, but are not limited to:

70 (i) model ocean and coastal acidification trends in coastal waters and project acidification  
71 trends;

72 (ii) study the effects of acidification on marine species that are ecologically or  
73 economically important, or understudied. The study should examine the impact of multimodal  
74 stress, and should include, at minimum, a study of acidification effects on american lobster,  
75 eastern oyster, sea scallops, quahogs, and fin fish;

(iii) clarify the causal relationship between nutrient pollution, eutrophication, and coastal acidification in coastal waters;

78 (iv) determine how different coastal stressors contribute to coastal acidification

79 (v) estimate the economic impacts of modeled and projected acidification on the  
80 Massachusetts economy;

(vi) determine if current total maximum daily loads under the Massachusetts estuaries project are sufficient to keep acidity in Massachusetts embayments within the range required by 314 CMR 4.05 through 2050, and propose changes to 314 CMR §§ 4, 5 and total maximum daily loads if needed, taking into account ocean and coastal acidification as particularized stressors.

(vii) perform a cost benefit analyses of intervention strategies to determine where pollution reductions will most efficiently resilience acidification;

(viii) develop best adaptive practices for the shellfishing industry to use to adapt to acidification.

89 (f) If the council determines that eutrophication has more than a de minimis impact on  
90 coastal acidification in any given embayment or coastal zone, the council may implement  
91 necessary improvements in the most efficient manner to reduce eutrophication. The council may  
92 target funds to existing state programs or proposed municipal projects for the following  
93 purposes:

94 (i) financing necessary upgrades to publicly owned treatment works located in coastal  
95 watersheds to achieve enhanced nutrient removal;

96                         (ii) replacing septic systems in nutrient sensitive coastal watersheds with connections to  
97     new or existing publicly owned treatment works, or upgrading existing systems to nitrogen-  
98     reducing systems;

99                         (iii) implementing other appropriate measures including but not limited to, installing  
100    permeable reactive barriers and funding salt marsh restoration.

101                         SECTION 5. Section 61 of Chapter 30 of the General Laws, as appearing in the 2020  
102    Official Edition, is hereby amended by inserting after the phrase “predicted sea level rise”, the  
103    following words: and coastal ocean acidification.